PLANT BREEDING

Grazing Systems Research Update: Year-Round Forage Options

The ultimate goal for every forage producer is to have high-quality forage in a sufficient quantity to feed livestock every day all year long.

Current research at the Noble Research Institute aims to develop year-round grazing systems for the Southern Great Plains. Because no single forage can accomplish this (Figure 1), we are evaluating several forage species in mixtures or in combination.

We are using a put-and-take stocking method to measure grazing days, average daily gain and total pounds of beef gain per acre for each system. Using the animal performance data and expected prices for cattle and agronomic inputs, we have developed detailed enterprise budgets that report calculated revenues, costs and net returns to land, labor, management and overhead for each of the alternative grazing systems we have evaluated during the past 16 years.

ALTERNATIVE SYSTEMS
Table 1 summarizes the animal performance and the productivity of each system over the year.

Figure 1: Forage Distribution

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A few systems with greater net returns are worth mentioning:

- Perennial, summer-dormant tall fescue (Flecha and Chisholm)
- 800RR experimental alfalfa, currently being developed by the Noble Research Institute
- The annual systems that include multiple species (i.e., wheat/crabgrass and rye/rhizgrasse)

Limbinary results from a sensitivity analysis suggest alfalfa needs to persist for approximately five seasons to be economically competitive in these systems.

## NEW TECHNOLOGIES

We are also developing and deploying new technology to improve efficiency in grazing research. The photo you see above the title of this article depicts our walk-over-weighing system, and a fabricated metal platform (WOW load bar/scale, platform, EID reader and associated electronics), a custom-designed solar power system, and a fabricated metal platform designed to be mobile. Each system is positioned in front of the sole water source, so each animal has to walk over the scales to access water.

Ultimately, we would like to develop decision support tools to help producers make management decisions — involving, for example, stocking rate adjustments, marketing opportunities and quick identification of sick animals — on the best-adapted and most profitable forage systems in the region. In order to accomplish this, we need to be able to estimate daily forage biomass and daily animal weight in conjunction with the integration of weather and proven crop models that will help us predict future biomass.

We plan to collaborate with a systems data modeler once these systems are fully adapted and most profitable forage systems in the region. In order to accomplish this, we need to be able to estimate daily forage biomass and daily animal weight in conjunction with the integration of weather and proven crop models that will help us predict future biomass.